

B1) generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time.

9. (Amended) A process control and/or monitoring system comprising:

a process controller;

an I/O subsystem; and

a workstation having a display screen, said workstation comprising:

B2) means for generating and displaying on the display screen a trend chart containing values of one or more selected process parameters during a selected time window based on a user-defined trend chart configuration; and

means for generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time.

REMARKS

This Amendment responds to the Office Action of May 6, 2002. Based on the foregoing amendments and the following comments, reconsideration and allowance of the application are respectfully requested. Claims 1-24 are pending in this application. Claims 1 and 9 are amended herein.

The Office Action rejected claims 1-5, 8-12, and 14-24 under 35 U.S.C. §102(b) as being anticipated by Hanson (U.S. Patent No. 5,257,206). Claims 1, 3-5, 9, 11 and 12 were rejected under 35 U.S.C. §102(b) as anticipated by Murphy (U.S. Patent No. 5,768,148). Claims 6, 7 and 13 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps. Applicant respectfully disagrees with these rejections.

Hanson is directed to a statistical process control system for an air separation plant. Hanson discloses that with some air separation processes a very substantial amount of data is available over short time periods with respect to the dominant time constraints of the process. As a result, subgrouping of the data is frequently applied (Col. 7, line 67 to Col. 8, line 3).

Hanson further discloses that the sampling size for a subgroup may be dependent on process dynamics, ease and cost of data acquisition, and the variability inherent in the measurement process. Typical subgroupings that work well for air separation for processes range from 3-9 values taken one to two minutes apart; the time between subgroups can be zero to ten minutes or more (Col. 8, lines 7-24). Determination of distribution type and probability density function by computer analysis can result in the creation of appropriate control charts, such as those illustrated in Figure 6 and Figure 7 (Col. 8, lines 37-45). Hanson further discloses that the trend of measured values may be analyzed to determine whether consecutive samples progressively increase or progressively decrease for a specific number of trend lengths or sampling intervals. If the process variable exceeds a specified limit an alarm condition may exist and a warning may be viewed by generating an audible tone or displaying a message on the chart, as illustrated by alarm 351 in Figure 7 (Col. 9, lines 39-51).

Hanson further discloses that a histogram, such as the one illustrated in Figure 8 may be used to determine if alarm conditions exist. The horizontal axis of Figure 8 is the length of trends for the historical data. The length of a trend is the difference in value between consecutive points in a chart. The vertical axis is the percent occurrence of these lengths of trends. Thus, Figure 8 is a probability density function for the distribution of trend lengths for the data in Figure 7. Also shown in Figure 8 is a statistical analysis of this probability density function, using the quantile technique for designated Type I error. Hanson discloses that a trend length for the alpha value is determined by integration of the probability density function as shown in the text of Figure 8 (Col. 9, line 65 through Col. 10, line 16). Thus, the text in Figure 8 is a statistical analysis of the function shown on the two axes.

Hanson further discloses that upon establishment of control chart parameters, real time samples for designated process variables may be collected and displayed on control charts such as those illustrated in Figures 15 and 16. Hanson further indicates that the chart of Figure 15 would result in an alarm since the thresholds of the upper and lower control limits were attained (Col. 16, line 65 through Col. 17, line 5).

The Office Action asserts that Hanson displays a trend chart in Figures 6-8 and 15-18 during a selected time window and displays an event table for the selected time window. The Office Action further asserts that the event table is illustrated by the alarm described at Col. 9, lines 45-56 and shown in Figures 6 and 7, or the table shown in Figure 8. Applicant respectfully

disagrees with this characterization of Hanson. As mentioned above, the alarms illustrated in Figures 6 and 7 are generated based on statistical analysis of the trends. By contrast, claim 1 recites “generating and displaying on the display screen an event table containing information described by process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time.” The alarms illustrated in Figure 6 and 7 of Hanson indicate, based on statistical analysis, that the trends have exceeded predetermined thresholds. This is very different from displaying an event table which contains information describing process events. Moreover, the text shown in Figure 8 of Hanson is merely statistical analysis of the histogram displayed in Figure 8. The text of Figure 8 is not “an event table containing information describing process events.” Indeed, the table illustrates the quantile technique for designating error and integration of the probability density function shown on the axes. These are not process events related to a selected process parameter. Indeed, a particular process parameter is not even indicated in Figure 8. As a result, Hanson fails to disclose or suggest displaying an event table as required by the claim. Thus, claim 1 patentably distinguishes over Hanson. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by Hanson be withdrawn.

Claims 2-5 and 8 depend from claim 1 and are patentable for at least the same reasons discussed above in connection with claim 1. Accordingly, it is respectfully requested that the rejection of claims 2-5 and 8 as being anticipated by Hanson be withdrawn.

Claim 9 recites “means for generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time. As discussed above in connection with claim 1, Hanson fails to disclose or suggest generating or displaying an event table. Thus, claim 9 patentably distinguishes over Hanson. Accordingly, it is respectfully requested that the rejection of claim 9 under 35 U.S.C. §102(b) as being anticipated by Hanson be withdrawn.

Claims 10-12 depend from claim 9 and are patentable for at least the same reasons discussed above in connection with claim 9. Accordingly, it is respectfully requested that the rejection of claims 10-12 under 35 U.S.C. §102(b) as being anticipated by Hanson be withdrawn.

Claim 14 recites, "a first display area configured to display at least one trend line and a second display area configured to display information representative of at least one process event, and event markers related to the at least one process event and displayed on the first display area." Hanson fails to disclose or suggest a graphical user interface with a display area for a trend line and a display area for displaying information representative of at least one process event. Hanson discloses only one display area showing control charts or histograms, but does not disclose or suggest a graphical user interface with two display areas, as required by claim 14. Therefore, claim 14 patentably distinguishes over Hanson. Accordingly, it is respectfully requested that the rejection of claim 14 under 35 U.S.C. §102(b) as anticipated by Hanson be withdrawn.

Claims 15 and 16 depend from claim 14 and are patentable for at least the same reasons discussed above in connection with claim 14. Accordingly, it is respectfully requested that the rejection of claims 15 and 16 under 35 U.S.C. §102(b) as anticipated by Hanson be withdrawn.

Claim 17 recites means for simultaneously displaying a trend graph representing at least a portion of the historical trend data and a table representing at least a portion of the event records, wherein the table displays event records related to the portion of the historical trend data being displayed on the trend graph. As mentioned above, Hanson fails to disclose or suggest simultaneously displaying a trend graph and an event table. Indeed, Hanson does not disclose or suggest an event table. Therefore, claim 17 patentably distinguishes over Hanson. Accordingly, it is respectfully requested that the rejection of claim 17 under 35 U.S.C. §102(b) as anticipated by Hanson be withdrawn.

Claims 18-24 depend from claim 17 and are patentable for at least the same reasons as discussed above in connection with claim 17. Accordingly, it is respectfully requested that the rejection of claims 18-24 under 35 U.S.C. §102(b) as anticipated by Hanson be withdrawn.

Claims 1, 3-5, 9, 11 and 12 were rejected under 35 U.S.C. §102(b) as anticipated by Murphy, et al. (U.S. Patent No. 5,768,148). Murphy is directed to a man-machine interface for power management control systems. Murphy discloses a utility for rapid development of three dimensional representations of electrical distribution switchgear. The switchgear elevations have logical connections to the switchgear devices. Any elevation can be modified to any dimensions with an infinite number of combinations and arrangements of meters and protection devices to

quickly and accurately represent a customer's switchgear. Also, an event logger utility is provided for viewing, organizing, and analyzing unusual behavior in a power system (Abstract).

Applicant's claim 1 recites generating and displaying on the display screen a trend chart containing values of one or more selected process parameters during a selected time window based on a user defined trend chart configuration and generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occur during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time. Although Murphy discloses a waveform capture module for viewing an analysis of waveforms, such as voltage waveforms (Figure 6), this is very different from a trend chart which includes values of one or more selected process parameters during a selected time window. Figure 5 of Murphy illustrates an event logger utility (Col. 2, line 65 through Col. 3, line 8). However, the event log is not an event table containing information describing process events that are related to selected process parameters displayed in a trend chart. Indeed, Murphy entirely fails to disclose or suggest the use of trend charts. Moreover, Murphy fails to disclose or suggest that the event logger may be viewed on the display screen at the same time as a trend chart, as required by claim 1. As a result, claim 1 patentably distinguishes over Murphy. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by Murphy be withdrawn.

Claims 2-8 depend from claim 1 and are patentable for at least the same reasons discussed above in connection with claim 1. Accordingly, it is respectfully requested that the rejection of claim 1 under 35 U.S.C. §102(b) as anticipated by Murphy be withdrawn.

Amended claim 9 recites, "means for generating and displaying on the display screen a trend chart containing values of one or more selected process parameters during a selected time window based on a user defined trend chart configuration" and "means for generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occur during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time." As discussed above, Murphy fails to disclose or suggest a display screen including means for generating and displaying on the display screen a trend chart and means for generating and displaying on the display screen an event table such that the event table and the trend chart

may be viewed on the display screen at the same time. Therefore, claim 9 patentably distinguishes over Murphy. Accordingly, it is respectfully requested that the rejection of claim 9 under 35 U.S.C. §102(b) as anticipated by Murphy be withdrawn.

Claims 10-13 depend from claim 9 and are patentable for at least the same reasons as discussed above in connection with claim 9. Accordingly, it is respectfully requested that the rejection of claims 10-13 under 35 U.S.C. §102(b) as anticipated by Murphy be withdrawn.

Claims 6, 7, and 13 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps. The Office Action asserted that the omitted steps are displaying the trend chart and the event table on the display screen such that the user can view both the trend chart and the event table at the same time. To resolve this issue, Applicants have amended claim 1 and claim 9 to recite that the event table and the trend chart may be viewed on the display screen at the same time. Accordingly, it is respectfully requested that the rejection of claims 6, 7, and 13 under 35 U.S.C. §112, second paragraph, be withdrawn.

CONCLUSION

Based upon the above discussion, careful reconsideration and allowance of the application are respectfully requested. If any issues remain outstanding in this application, the Examiner is requested to telephone Applicants undersigned attorney.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted

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1. (Amended) A method for displaying process information in a process control and/or monitoring system comprising a workstation having a display screen, a controller and an I/O subsystem, said workstation executing the steps of:

generating and displaying on the display screen a trend chart containing values of one or more selected process parameters during a selected time window based on a user-defined trend chart configuration; and

generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time.

9. (Amended) A process control and/or monitoring system comprising:

a process controller;

an I/O subsystem; and

a workstation having a display screen, said workstation comprising:

means for generating and displaying on the display screen a trend chart containing values of one or more selected process parameters during a selected time window based on a user-defined trend chart configuration; and

means for generating and displaying on the display screen an event table containing information describing process events that are related to the selected process parameters and that occurred during the selected time window, such that the event table and the trend chart may be viewed on the display screen at the same time.